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NIGHTLIGHT WITH INTERCHANGEABLE ROTATING DESIGN DISK

BACKGROUND OF THE INVENTION

Technical Field of the Invention

[0001] This invention relates to nightlights. More particularly, and not by way of limitation, the present invention is directed to a nightlight having an interchangeable rotating design disk through which the light bulb of the nightlight shines.

Description of Related Art

[0002] People have used nightlights for a number of years to provide a low level of illumination to a room or hallway during nighttime hours. Over the years, nightlights have been sold with different decorative covers that are illuminated by the light bulb of the nightlight. For example, at Christmas time, nightlights have been sold with covers designed to look like Santa Claus. For children's rooms, nightlights have been sold with covers designed to look like comic or movie characters. However, these prior art nightlights did not have a movable image, or a changeable image.

[0003] In U.S. Patent No. 6,572,245 to Stekelenburg, a nightlight with a dynamic image effect is disclosed. However, the nightlight requires a vertical light tube and a cylindrical cover, which rotates around the light tube to provide a moving image effect. However, this configuration requires significant complexity to cause the cylindrical cover to rotate around the stationary central light tube. Stekelenburg further discloses that the image may be formed by adhering an image film to the cylindrical cover, and that the image may be changed by removing and replacing the image film that is adhered to the cover. This is a cumbersome and difficult task, especially for children.

SUMMARY OF THE INVENTION

[0004] In order to overcome the disadvantage of existing solutions, it would be advantageous to have a nightlight with a simple design that is inexpensive to manufacture, and that has a moving image that is easily interchangeable. The present invention provides such a nightlight.

[0005] In one aspect, the present invention is directed to a nightlight that includes illuminating means; means for energizing the illuminating means; means for interposing a design disk between the illuminating means and a user of the nightlight; and means for rotating the design disk. The energizing means may be either a direct current (DC) power source or means for connecting the nightlight to an alternating current (AC) power source.

[0006] In another aspect, the present invention is directed to a nightlight that includes a casing having an aperture in a

front side thereof; a plug that extends from a rear side of the casing and connects the nightlight to an AC power source; and a light bulb that is illuminated by the AC power source and provides illumination through the aperture in the front side of the casing. The nightlight also includes an electric motor mounted in the casing that receives power from the AC power source and has a shaft that extends through the front side of the casing proximate to the aperture illuminated by the light bulb. The nightlight also includes a transparent or translucent design disk that mounts on the shaft and rotates with the shaft when the motor is powered by the AC power source. The design disk has a diameter that causes the disk to cover the aperture in the front side of the casing when the disk is mounted on the shaft. The design disk has a design thereon that is visible when viewed from the front side of the nightlight when the light bulb shines through the disk from the opening in the front side of the casing.

[0007] In yet another aspect, the present invention is directed to a nightlight that includes a casing having a front side and a rear side; a plug that extends from the rear side of the casing and connects the nightlight to an AC power source; and a light bulb within the casing that is illuminated by the AC power source. The nightlight also includes an illumination area on the front side of the casing from which illumination from the light bulb is radiated; and an electric motor mounted in the casing that receives power from the AC power source. The motor has a shaft that extends through the front side of the casing proximate to the illumination area. The nightlight also includes a design disk that mounts on the shaft and

rotates with the shaft when the motor is powered by the AC power source. The design disk has a diameter that causes the disk to cover the illumination area when the disk is mounted on the shaft. The design disk has a design thereon that is visible when viewed from the front side of the nightlight when the light bulb shines through the disk from the illumination area on the front side of the casing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The invention will be better understood and its numerous objects and advantages will become more apparent to those skilled in the art by reference to the following drawings, in conjunction with the accompanying specification, in which:

[0009] FIG. 1 is a perspective view of a first embodiment of the nightlight of the present invention;

[0010] FIG. 2 is an exploded perspective view of the nightlight of FIG. 1A with the interchangeable rotating design disk removed;

[0011] FIG. 3 is an exemplary electrical circuit suitable for use in the nightlight of the present invention; and

[0012] FIGS. 4A-4C are front views of three exemplary design disks suitable for use with the nightlight of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS

[0013] FIG. 1 is a perspective view of a first embodiment of the nightlight 10 of the present invention. For power, the nightlight plugs into any standard alternating current (AC) electrical outlet using prongs 11. A casing 12 encloses an electronic circuit 20 (see FIG. 3), which powers a light bulb 13 and, optionally, an electric motor 14. Separate switches 15 and 16 on top of the casing enable a user to turn on the light and the electric motor.

[0014] The light bulb 13 shines through a generally trapezoidal area 17 within the top half of the casing 12. The area may be an aperture in the casing, or a transparent or translucent portion of the casing that allows light from the light bulb to provide illumination from the front side of the casing. An interchangeable transparent or translucent design disk 18 removably mounts on a shaft 19, which extends through the casing from the electric motor 14 therein. The height of the shaft, in relation to the lighted area 17, is selected so that the design area 21 of the disk passes in front of the lighted area as the disk rotates on the shaft.

[0015] FIG. 2 is an exploded perspective view of the nightlight 10 with the interchangeable rotating design disk 18 removed from the shaft 19. By simply slipping a disk onto or off of the shaft, a new design can be illuminated by the lighted area 17.

[0016] FIG. 3 is an exemplary electrical circuit 20 suitable for use in the nightlight of the present invention. An AC power source 22 is connected to the light bulb 13 when switch (SW1) 15 is closed. If switch (SW2) 16 is also closed, the AC

power source is also connected to the electric motor 14. The electric motor may be an AC motor, or may be a direct current (DC) motor with an internal or external AC-to-DC converter. Resistors R1 and R2 balance the load between the light bulb and the electric motor. Optionally, switch (SW2) 16 may be replaced by a rheostat that adjustably controls the current supplied to the electric motor. In this way, the user can control the speed at which the design disk rotates.

[0017] In another embodiment, the power source is a direct current (DC) power source such as a battery. The electric motor 14 in this embodiment is a DC motor. With this embodiment, the nightlight does not have to be plugged in to a wall outlet. Instead, the nightlight may be placed on any suitable surface such as a dresser or a bedside table. Legs may be provided to raise the casing to a sufficient height for the design disk to clear the surface of the dresser or table.

[0018] By closing only switch (SW1) 15, a user can illuminate the light bulb 13 of the nightlight without rotating the disk 18, or without even mounting the disk, if a plain white light is preferred. Closing both switches 15 and 16 causes the light bulb to be illuminated and the disk to rotate in front of the lighted area 17.

[0019] FIGS. 4A-4C are front views of three exemplary design disks 18a-18c suitable for use with the nightlight of the present invention. Although only three designs are shown, many more designs could be used with the present invention. FIG. 4A illustrates a first design disk 18a in which sheep 25 are seen to be jumping through the lighted area 17 as the disk rotates. In other similar designs, the user's favorite breed of dog,

cat, horse, and the like may be illustrated. FIG. 4B illustrates a design disk 18b that changes colors as it rotates. In the example illustrated, the disk passes the colors of the rainbow in front of the lighted area as the disk rotates. FIG. 4C illustrates a design disk 18c that rotates an object of interest to the user in front of the lighted area. In the example illustrated, the disk passes the design of a sports team in front of the lighted area as the disk rotates. The design could also be, for example, nature scenes, cartoon characters, sports stars, movie stars, or any other subject of interest.

[0020] It is thus believed that the operation and construction of the present invention will be apparent from the foregoing description. While the multi-sectioned container shown and described has been characterized as being preferred, it will be readily apparent that various changes and modifications could be made therein without departing from the scope of the invention as defined in the following claims.